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Compulsory vaccination.
London, 1869.

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COMPULSORY VACCINATION.

An Inquiry

INTO

THE PRESENT UNSATISFACTORY CONDITION
OF VACCINE LYMPH,

AND

A REMEDY PROPOSED.

BY

HENRY BLANC, M.D., F.R.G.S., &c.

STAFF ASSISTANT SURGEON, BOMBAY ARMY.

SUPERINTENDENT OF VACCINATION, WESTERN CIRCLE, BOMBAY.

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P R E F A C E.

My object in reading this paper at the Exeter Meeting of the British Association for the Advancement of Science, and also a somewhat similar one at the Leeds Meeting of the British Medical Association, was to submit, first of all, the question of vaccination direct from the heifer to a scientific inquiry and discussion. On both occasions the necessity of a reform was entertained by those present who were the most qualified to form an opinion on this very important question.

The acceptance of animal vaccination as part of our national arrangements does not at all imply the abandonment of arm-to-arm vaccination. Such, at least, is my view of the case. Dr. Rollet, the senior surgeon to the Hôtel Dieu, Lyons (an impartial writer on the subject), in a letter addressed, only three days ago, to the "Gazette Hebdomadaire,"

very clearly sums up the advantages of animal vaccination. "In my opinion," he says, "animal vaccination possesses not only the advantages of rendering impossible the transmission of syphilis, but it will renew our vaccine lymph, giving it fresh youth and strength. That which, after mature reflection, makes me adhere all the more firmly to the cause of animal vaccination, is the belief that, if undertaken on a sufficiently large scale, it will cause vaccination to be so generally accepted, that in a short time an unvaccinated person will be a very rare exception."

H. B.

9, BEDFORD STREET, BEDFORD SQUARE,
September 6, 1869.

COMPULSORY VACCINATION.

By the Vaccination Act of 1867, every parent is bound to have his child vaccinated within three months from the child's birth. Compulsion is always an extreme and distasteful measure ; however, in the present instance it is not only right but necessary, as without it we should be unable to eradicate from amongst us one of the greatest scourges that ever afflicted mankind. If the Act were wisely and properly applied, it would soon lose its compulsory character ; and vaccination, instead of being avoided and dreaded by a large section of the public, would be hailed by all as one of the greatest blessings that the human mind ever bestowed upon man.

I fear greatly, however, that before many years, if no steps be taken to improve vaccination, the resistance on the part of the public will be so general that the law must become a dead letter,

and only when too late will the authorities regret their apathy, and the public their neglect of one of our greatest sanitary measures. Never indeed was the future of vaccination so threatened as at the present day; and how can it be otherwise, when no heed is taken of the many warnings daily given by the true friends of this great prophylactic. The declared adversaries of vaccination are far less dangerous to its cause than those who in the presence of the strongest evidence persist in the denial of the possibility of the transmission of other diseases, and of the actual degeneration of vaccine lymph, and who endeavour by partial and trivial facts to force upon the public a belief in a perfection that no longer exists.

The anti-vaccinators, however wrong on many important points, have, by their exaggerated statements, done good service to the cause of vaccination. By enlarging on its few existing defects they have called public attention to a subject of great importance, and have roused the medical profession from a feeling of too great security to one of caution and care.

I have said that I considered compulsory vaccination a wise and proper measure, but this must be subordinate to one essential condition—namely, that the vaccine lymph forced upon the public shall be as

pure and as perfect as we can obtain it.* Does the present vaccine lymph possess these characters? I most positively affirm that it does not; and I trust that after a careful examination of the subject my conviction will be shared by all. We will therefore discuss the two following important questions:—

1st. Can other than vaccine disease be transmitted by humanized vaccine lymph?

2nd. Is humanized lymph of long standing a trustworthy prophylactic against small-pox?

In answer to the first query it is but proper for me to state that I do not believe that every possible disease can be communicated by human lymph; that lunacy can be traced to vaccination, that it predisposes to cholera, scrofula, &c.; and the opinion that the many ailments that affect children after vaccination are due to that cause is not only incorrect, but irrational and absurd. On the contrary, I believe that in the great majority of cases vaccination, if performed with proper care, is a harmless and inoffensive operation. At the same time I am obliged to

* This opinion has been repeatedly and very ably expressed by several of the Medical and Daily Papers. The *Times*, *Pall Mall Gazette*, the *Daily Telegraph*, the *Spectator*, &c., deserve great credit for the interest they have taken in a question of such vital importance to the Public at large.

admit that under certain circumstances the transmission of disease is not only possible, but must be received as an acknowledged fact.

If we can prove beyond reasonable doubt that the transmission of disease has taken place, even if only in a few instances, these instances should render us less positive in our denials when in presence of very strong probabilities only.

Against such facts negative evidence should have no weight. It only proves that those who deny such transmission have never themselves seen cases in which it had taken place; but that such cases are not common does not affect the evidence of those who have witnessed them themselves. Should we not laugh at the idea of a person convicted of murder on the testimony of two trustworthy witnesses proposing to bring forward twenty persons to swear in his defence that they had not seen him commit the deed? Such, however, is the accepted testimony brought to bear against well-observed cases of transmitted disease.

Science acknowledges two orders of disease that have been transmitted by human vaccine lymph:—certain affections of the skin and syphilis. In “Papers relating to the History and Practice of Vaccination,” by Mr. Simon, F.R.S., presented to both Houses of

Parliament in 1856, we find at p. 125 a statement made by Mr. Robert Ceely of Aylesbury, who after Jenner has done more than any living man to solve many important questions pertaining to vaccination. Mr. Ceely says, "I have known impetigo and ecthyma result from genuine lymph taken from a healthy subject and transferred to an apparently healthy skin—these troublesome diseases superseding the vaccine altogether."

On the 15th of June last the Paris correspondent of the "Medical Times and Gazette" writes as follows:—"The fact of syphilitic inoculation is certain, and though M. Briquet tried to deny the fact in the children of Auray, he cannot, nor can M. Guérin, deny the cases that happened here in Paris under our own eyes in 1865, when four out of nine children thus inoculated died from the effects of syphilis; all such terrible accidents he adds are avoided by animal vaccination, for every one knows that syphilis cannot be given to the bovine race, and if it is true, as Dr. Danet advances, that the vaccine virus in passing through the organism of an individual becomes impregnated with the constitutional principles of that organism, besides the already known fact of syphilis, it is certainly often dangerous to vaccinate from arm to arm, and the only means of shielding against

these dangers is in the use of the virus from the cow."

Dr. Ricord, the eminent French syphilographer, answered, in 1856, Mr. Simon's question by a very decided "Non, non." Ten years afterwards he wrote: "La syphilis vaccinale quelles qu'en soient les conditions et le mécanisme paraît être aujourd'hui un fait établi;" or in a few plain English words, "Syphilis transmitted by vaccination must now be received as an acknowledged fact."

On the 3rd of the past month the question of the transmission of syphilis in connexion with vaccination was discussed at the Imperial Academy of Medicine of France, and Dr. Depaul, the Director of Public Vaccination in France, brought forward many fresh instances of such transmission, and proved the correctness of more ancient and still disputed cases. He and Dr. Henri Roger had examined, he said, at Auray, fifty-four children who were suffering from syphilis inoculated with vaccine lymph. In all these they had not only found syphilitic sores on the vaccinated arms, but had also ascertained the presence of constitutional symptoms of that disease—namely, "plaques muqueuses" in the mouth, throat, &c., copper-coloured spots on the skin, alopecia, &c.

Dr. Depaul also states that in the "Département du

Lot, France, M. Lafage received from Dr. Nartory some vaccine lymph collected from an apparently very healthy child; with this lymph another apparently healthy child was vaccinated, and from him, in August, 1866, twenty-two children were vaccinated; after a while the whole of these children fell ill. Two medical men, Drs. Clary and Guary, were charged by the Prefect to make an inquiry. They found on thirteen of the children manifest syphilitic symptoms, 'plaques muqueuses,' copper-coloured spots on the skin, alopecia, &c. The child who had supplied the lymph was found to be healthy, but the mother, on examination, was seen to be suffering from syphilis. These cases illustrate how difficult it is, without a searching inquiry, to arrive at the truth, and how, on a superficial examination, a negative conclusion might easily be recorded."

Dr. Depaul, in concluding his speech, remarked—"Within a very short time more than forty cases of vaccinal syphilis have been observed and accepted as open to no doubt by many scientific men. All the theories, all the false interpretations, all the subtleties of those who against evidence persist in their denial, cannot in any way weaken these facts. Syphilis introduced into the system by vaccination is no myth; it is a sad and terrible reality."

On the 10th of August the *Pall Mall Gazette*, after stating that "the only two diseases put forward by the anti-vaccinators which really do anything to sustain their cause, are syphilis and skin disease," very wisely remarks: "What is required is the adoption of stringent measures for insuring good lymph, and the proper remedy is not the abandonment, but the improvement of compulsory vaccination."

On the question of the transmission of disease, I desire to be clearly understood. I do not think that this transmission is of such frequency as to deter from the practice of arm to arm vaccination. But as we cannot deny the possibility, nay the existence, of such transmission, the public should be supplied, in presence of "compulsory vaccination," with an uncontaminated vaccine lymph, and we should at least allow those who object to vaccination through fear of contagion, to choose between humanized vaccine lymph and spontaneous cow-pox, transmitted in all its purity from heifer to heifer.*

* We have on record many more instances of syphilis transmitted by vaccination, such as the cases of Rollet, Viennois, Herard, Chassaignac, Lecoq, Cerioli, Tassani, Gallego, Whitehead, &c.; I will specially mention the one published by Dr. Druitt in the fifth volume of the "Transactions of the Obstetrical Society," as the high scientific position of the observer gives ex-

2nd. Is humanized lymph of long standing a trustworthy prophylactic against small-pox? No.

The present vaccine lymph, there can be no doubt, is degenerated; and has lost much of its anti-variolic power.

Far from my being alone in this opinion, it is one shared by all the best authorities on vaccination. Dr. Ballard, in his able and valuable treatise on vaccination, expresses himself as follows:—"It is said that the virus degenerates by successive generations, even when the utmost care is taken in the selection of the

ceptional importance to this case. I have not gone into the details of these well-known cases, because it was not the frequency but the fact of such transmission that I desired to prove.

I am daily told, by educated and well-informed persons, of very astonishing cases of loathsome skin diseases, of foul eruptions, of children pining away, &c., as the consequence of arm-to-arm vaccination. Doubtless much of what is said is due to prejudice or exaggeration. Still it is certainly a duty we owe to the public to give to every doubtful case a patient, careful, and public inquiry. Whatever evils may be traced to vaccination, let them come to light! If only imaginary, the fears of the public will be allayed; if true, we must then accept the necessity of having recourse to a purer lymph, or do away with compulsory vaccination. There is a want of prudence in the obstinate denial of any possible transmission of disease. Some letters have appeared lately in a medical periodical from public vaccinators of twenty to thirty years' standing, testifying to their belief in the absolute purity of human vaccine lymph. How is it, then, that other public vaccinators, also of twenty or thirty years' practice, apply to me for a supply of heifer vaccine lymph in order to *vaccinate their own children*.

vaccinifer, and in taking lymph at the proper age. Is it so? I believe that it is." The admirable papers by Mr. Simon, to which I have already had occasion to refer, not only contain an immense amount of valuable information, but are, moreover, written in an honest, upright, and unbiassed spirit. Mr. Simon, the medical officer to the Privy Council, is, I am glad to say, one of the many highly scientific men who believe in the degeneration of the vaccine lymph at present in use. At p. 39 of "Papers" he says, "Mr. Bousquet, Dr. Gregory, Mr. Estline, Professor Hering, Mr. Fiard, Dr. Steinbrenner, have established beyond the possibility of reasonable doubt that certain original properties of the vaccine contagion have very greatly declined after its long successive descent from the cow." Again, p. 41, Mr. Simon, after a careful study of the progressive successes in revaccination, as practised in the Prussian army, states, "The vaccinations of 1836, tested by eventual resusceptibility to cow-pox, were *not half* so stable as the vaccinations of 1813."

I will as briefly as possible endeavour to prove the degeneration of vaccine lymph and its loss of anti-variolic power from two indisputable facts—namely, the gradual increasing resusceptibility to small-pox, and the gradual increasing fatality amongst the vaccinated.

Let us begin with Jenner. He says, "What renders the cow-pox so extremely singular is that the person who has been thus affected is for ever after secure from the infection of the small-pox; neither exposure to the variolic influence, nor the insertion of the matter under the skin, producing the distemper." Further on he again states, "I have purposely selected several cases in which the disease had appeared at a very distant period previous to the experiment made with variolous matter, to show that the change produced in the constitution is not affected by time." Mr. Fry, surgeon at Dursly, writing to Jenner, says, "I am fully convinced that a person who had the cow-pox is no longer capable of being acted upon by the variolous matter."

First inference.—Direct inoculation from the cow, in other words, "animal vaccination," is, according to the testimony of Jenner and others, a most perfect and lasting protection against small-pox.

If we now examine the results of vaccination in the first years following its discovery, we shall no longer find the same complete immunity as when animal vaccination was the agent, but yet results far superior to those observable as we gradually depart from the original source.

In the Report of the Royal Jennerian Institution,

1806, we find "that the Medical Council are fully convinced that the failure of vaccination as a preventive of the small-pox is a *very rare occurrence*." In the Report of the Royal College of Physicians on Vaccination, 1807, it is stated "that the opinion that vaccination affords but a temporary security is supported by no analogy in nature, nor by the facts that have hitherto occurred; although the experience of vaccination be only of a few years, yet the same disease, contracted by the milkers of cows in some districts, has been long enough known to ascertain that in *them at least* the insusceptibility to the small-pox contagion *does not wear out by time*."

Second inference.—A few cases of post-vaccinal small-pox were noticed as soon as "Natural animal vaccination" was superseded by the use of humanized lymph; but they are still rare, for the following reasons:—1st. Greater activity of the lymph, which had not as yet undergone many generations. 2nd. The short time that had elapsed since vaccination was performed.

Let us now pass to the year 1819. We have a very valuable report by Mr. Cross on an epidemic of small-pox that prevailed at Norwich during that year. Mr. Cross observed attentively 112 families, forming a total of 603 individuals; of the 202 who

suffered from small-pox, only two were from among the vaccinated. The number of vaccinated persons was ninety-one, the average of those contracting small-pox was therefore only 2·10 per cent.

I will now seek further proofs in the records of the London Small-pox Hospital, as given by that very distinguished surgeon, Mr. Marson, who, by carefully arranged statistics, extending over a period of thirty years, has been able to arrive at some very important conclusions, and to lay down rules of vital importance to the subject we are now considering. In the article on Small-pox, in Reynold's "System of Medicine," p. 271, Mr. Marson says: "From this period (1836) cases of small-pox after vaccination have kept gradually increasing in numbers until they now amount to four-fifths of the admissions into the Small-pox Hospital; thirty years since, from 1835 to 1845, the admissions of patients into the Small-pox Hospital were forty-four per cent. of small-pox after vaccination; from 1845 to 1855, 64 per cent.; from 1855 to 1865, 78 per cent.; and during the two years 1863, 1864, 83 and 84 per cent. respectively."

These numbers speak for themselves. Allowance being made for increase of population, and for the more extended practice of vaccination, we still find an increasing average quite independent of these natural

causes. Vaccination is not practised to the extent we might suppose. Dr. Seaton and Dr. Sanderson in their reports mention the very large proportion of unvaccinated children to be found all over the country, on an average from 20 to 50 per cent.; neither must we place too much reliance in the working of the Vaccination Act. Mr. Simon, in "Papers," &c., referring to it, says, "The stimulus that was given to early vaccination by the new law in the first year of its working became in the second year less effective than in the first, and in the third less effective than in the second."

Third inference.—From perfect immunity in those inoculated with spontaneous cow-pox, we pass from a few rare cases of subsequent small-pox to a small percentage, gradually but steadily increasing, *until in 1864 it reached the very high average of 84 per cent.!*

Let us now consider the second proof—namely, increasing fatality. If vaccine lymph has not degenerated, nor lost its anti-variolic power, between a hundred persons vaccinated on a certain date, and another hundred, say twenty years later, we should find no difference in the deaths among the two series. Is this the case? No.

We first have Jenner's milkers of cows, or animal vaccination. *No resusceptibility, no cases, no fatality.*

In 1806 and 1807, resusceptibility is a very rare occurrence.

In 1819, slight increase of post-vaccinal small-pox.

Epidemic of Norwich, no fatality. Epidemic of Scotland, fatality 1 in 310.

From 1816 to 1820, France, fatality 1 per cent.

From 1823 to 1827, Copenhagen, fatality 1 in 132.

1828, Marseilles, fatality 1 per cent.

1834, 1835, Carniola, fatality $4\frac{2}{3}$ per cent.

1834, Vienna Hospital, fatality $12\frac{1}{2}$ per cent.

1835, Vienna, fatality $11\frac{1}{2}$ per cent.

Mr. Marson, in his article on Small-pox, says: "During that period, from 1836 to 1855, the fatality among the vaccinated was 6·56 per cent.* Out of a large number of cases of small-pox after vaccination—viz., 1958 admitted into the Small-pox Hospital during the years 1863 and 1864, small-pox having been epidemic in London throughout those entire years, the mortality after vaccination shows a very considerable increase—viz., from 6·56 per cent., as given in Table IV. for the twenty years from 1836 to 1855, to a mortality of 9·9 per cent."

With reference to the increase, Dr. Seaton, in his excellent "Handbook of Vaccination," states (p. 241):—

* From 1855 to 1868 the fatality rose to about 8 per cent.

“But the proportion of deaths also from natural small-pox in the Hospital in the same year instead of being 35 per cent. of the cases, mounted to 47 per cent.; so that the difference was due not to the falling off in the prophylactic power of vaccination, but to the greater intensity of epidemic influence. The varying intensity of epidemic influence must be kept in mind.”

To a certain degree this is perfectly correct, but it applies only to those who were vaccinated with a lymph that had lost its anti-variolic power. Dr. Seaton himself corroborates this inference.

In his first note, page 241, *loc. cit.*, he remarks, “Among the thoroughly vaccinated patients in 1863, the death-rate was under 1 per cent.” Why, may we well ask, were not these also affected by the greater virulence of the epidemic? Had the thoroughly vaccinated formed the majority, Dr. Seaton’s argument would have been correct, but as they form but a very trifling per-centage of the whole, they simply confirm the fact of an increased fatality among the vaccinated in general. Calculating on the average of sixteen years, from 1836 to 1851, Marson’s Table IV., “Transactions Med.-Chirurgical Society,” shows that even at that date the *thoroughly* vaccinated gave only a per-centage of 8·6, leaving consequently *more than* 91 per cent. *improperly protected*. If, with a constantly

increasing resusceptibility, we have at the same time a gradual increasing fatality, the evil is two-fold, and the consequences are of such importance as to demand our most serious attention. A few more facts, most of them taken from the records of the London Small-pox Hospital, will complete the essential elements of this very important question. From 1800 to 1815, 6443 persons died of small-pox in London; and although the vaccinated, to the amount of many thousands, or even tens of thousands, were thus tried in the severest manner, they remained perfectly proof against contagion.

In 1819, nineteen cases of post vaccinal small-pox were admitted into the London Small-pox Hospital; in 1825, 147; from 1826 to 1832, 619; from 1833 to 1839, 900; from 1836 to 1851, 2784; from 1855 to 1865, 5622.

The fatality considered in the same series, namely, from 1819 to 1865 is the following:—0, 11, 40, 60, 191, 268, and 459. If we now take this last number, “459,” representing the fatality in the London Small-pox Hospital, from 1855 to 1865, among the vaccinated, and compare it with “528,” representing in the same establishment, and during the same lapse of time the fatality among the unvaccinated, it gives for the vaccinated a mortality of only 69 less than for the unvaccinated.

Fourth inference.—Among those protected by spontaneous cow-pox, *no fatality*. Trifling during the first years following the introduction of vaccination. Since then, a gradual alarming increase. What does this teach us? To follow the example of those who first practised animal vaccination; do as the milkers of cows did, and seek for a perfect protection in a return to the prophylactic in all its purity.

The remedy I propose is simply a return to the practice from which Jenner derived his great discovery; it is nothing else than science applied to a natural fact, and reason and knowledge once more perfecting a great sanitary measure. Vaccination direct from the heifer, or Animal Vaccination as it is called, is no novel or untried system. For many years it has been established in Naples, Paris, Brussels, St. Petersburg, Vienna, Berlin, Marseilles, &c.; and everywhere, after a hard-fought battle against apathy and routine, it has acquired an increasing prestige, and is now accepted by the learned and the people at large as the purest expression of Jenner's valuable gift to mankind. The lymph used by animal vaccinators is spontaneous cow-pox, transmitted in all its purity through a succession of heifers; it has never passed through the human body.

The vaccine lymph I have myself transmitted through a succession of heifers, was found last July by Dr. Warlomont, the Director of Public Vaccination in Belgium, on a cow in a farm near Brussels.

Animal vaccination offers the following advantages:—1st. The healthy heifer, inoculated with pure spontaneous cow-pox, supplies a vaccine lymph free from all morbid and diathetic principles. This first proposition is self-evident. The calf cannot possibly give a disease if he has none to give. This question was submitted long ago to the most distinguished veterinary surgeons, who gave the following highly satisfactory answer:—"Calves," they say, "are not liable to any diathetic diseases, nor to the spontaneous development of any infectious disease contagious to man, or other animals. A calf, bred in the country and fattened for the market, belongs usually to a good stock, and is, moreover, carefully examined before the sale is allowed. If we can eat the flesh of the parents and offspring, and drink the milk of the mother for years with advantage to ourselves, even the most stubborn and ignorant must acknowledge that no possible disease can be communicated with lymph transmitted through such an animal." We have beyond this another guarantee: cow-pox will not

take effect upon a calf if at the time the animal's health is not perfect in every respect.*

2nd. Spontaneous cow-pox by being transmitted only through the bovine race, retains all its essential qualities. Cow-pox is a disease of the bovine race, the same as small-pox is a disease of the human race. Small-pox, however infinitely transmitted in the human race, will always remain small-pox ; and however frequently, and to whatever extent cow-pox may be transmitted in the bovine race, it will always be cow-pox, and nothing else. The experience of years has placed this fact beyond doubt. Dr. Negri of Naples, Dr. Warlomont of Brussels, Drs. Depaul and Lanoix of Paris, have found no difference whatever between spontaneous cow-pox transmitted for years through heifers, and the more recent lymph met with on several occasions.

3rd. Vaccination direct from the heifer offers all the characteristics of the cow-pox, as described by Jenner, Ceely, Bousquet, &c., with such modifications only as are due to the passage of the lymph through young and healthy animals.

More activity, later development, a lengthened duration, and a well-marked deep cicatrix, such are the

* This fact I have experimentally tested.

characters of the vaccination due to heifer's lymph. An important question that we must not overlook is, Can we by culture and selection avoid the degeneration of lymph, and can we consequently be justified in resorting exclusively to the practice of arm-to-arm vaccination? Certainly not. What does the experienced Mr. Marson say on this subject? In his article on "Small-pox" he says:—"In the course of years vaccine lymph becomes humanized by passing many times through the subject, and can only be kept in a good state of efficiency by having many subjects constantly to select from for its continuance; and even then the cicatrices it leaves after many years' use are not so good as they were formerly. This is a point on which we can bear witness from our own experience, and it is shown by the above table how very important it is to have lymph that leaves good and permanent cicatrices." Mr. Marson, to his credit, applies his teachings to practice. Some time ago, having vaccinated some children from one of my heifers, he considered the results so satisfactory that he has since at his vaccinating station discontinued the use of the old lymph, and now vaccinates entirely from the more recent.

Mr. Simon, on this point, is also of Mr. Marson's opinion. He says ("Papers," &c.)—"An essential

condition of thorough vaccination shall be the employment of lymph in its most original efficiency."

Unless, therefore, we vaccinate "with lymph in its most original efficiency," we shall obtain even in the best of cases but very doubtful results; and to exult, as is sometimes done, in the fact that a hundred punctures gave rise to a hundred vesicles, means literally nothing. It is more than probable that most of these hundred vesicles, however large and fine they may appear, will leave either no cicatrices, or very indifferent ones. After a few years some of the vaccinated will fall victims to small-pox, and vaccination will be blamed, whilst the fault rests, not with the system itself, but in the fact that the lymph has, according to Mr. Marson, passed many times through the subject. Shall we pander to routine and vested interests and persist in what is no better than a lottery, where the stakes are public health and the honour of science?

Neither the continental animal vaccinators in their very large experience, nor I myself, have met with a single accident arising from the use of heifer lymph. Spontaneous cow-pox was much dreaded on account of the severe local inflammation it now and then provoked. But the excessive virulence is lost by the passage of the lymph through the young and healthy

animal. In children the constitutional symptoms are always trifling, never lasting more than forty-eight hours, and are only what we are bound to expect when dealing with a good active lymph.

This question has been satisfactorily solved in this country by the person most competent to judge on the subject, I mean Mr. Robert Ceely of Aylesbury. I am happy indeed to be able to record here my sense of gratitude and obligation towards that highly esteemed gentleman. Not only did he come on several occasions from Aylesbury to London in order to satisfy himself as to the working of animal vaccination, but was kind enough to make himself some experiments with lymph taken from the heifer. Mr. Ceely's very valuable opinion on the subject is the following. On the 26th of July he wrote to me—"I hope to be able to find a fair supply of subjects to carry on your lymph, *than which none can be better*. In my last I ought to have said that your primary lymph has all the qualities of that of the spontaneous disease, *except its too frequent acrimony*."

4th. By animal vaccination, we have always on hand an unlimited supply of good vaccine lymph. This is most important. Dr. Ballard, *loc. cit.*, p. 215, says: "Common experience has shown that, as vaccination is pushed forward amongst a population

so as to increase in quantity, it is very apt to suffer in quality. I myself found that, in 1863, when I had occasion to urge on the vaccination among a large population in consequence of the epidemic outbreak of small-pox, recourse was had very largely to dry lymph; . . . many hundreds of such charged points came under my supervision, and I had occasion to reject a considerable proportion on account of their being tinged with blood; the emergency was so great, and the demand for an immediate protection was so extensive, that any points which I could supply were greedily taken into use. Now what occurred at that time was but a sample of what may fairly be expected to occur whenever private and public vaccination come suddenly into requisition." Here also animal vaccination has established its superiority; with one heifer 500 persons can be vaccinated. With one heifer ten heifers can be inoculated; and as it requires only five days for the vesicles to be ready for use by animal vaccination, at six days notice 5000 persons can be vaccinated; at twelve days notice 50,000; and so on.

But as perfection is not to be met with in anything, we must expect to find a few disadvantages as a necessary accompaniment to animal vaccination. These are, the expenses, the great care and attention

required, and the fact that liquid lymph in tubes soon deteriorates..

Animal vaccination requires the whole time of a person exclusively devoted to the undertaking; the expenses are considerable, a subject on which I am well able to speak from the experience I have acquired in London; and, unless in this country, as on the Continent, Government acknowledges the usefulness of animal vaccination, and comes to its aid, it will, I fear, be beyond the reach of private enterprise. Vaccination *direct* from the heifer *is always perfectly successful*, and the results I have myself obtained are in every respect excellent. The lymph dried on ivory points and applied with proper care, gives very favourable results, although somewhat inferior to what is observed when the lymph is taken direct from the heifer. Liquid lymph preserved in tubes is very unsatisfactory, and cannot be depended upon.* Reform, not revolution, is our cry: that a reform is necessary, all must now feel convinced. Whatever may be our personal views as to the question of the transmission of disease, we know at least that by animal vaccination we compel the public no longer to accept a doubtful article, but a prophylactic free from

* I am glad to say that recent experiments contradict this assertion.

any possible contamination, and what is perhaps more worthy of consideration, a lymph affording not a mere temporary protection, but one as trustworthy and perfect as it is simple and harmless. Animal vaccination will in England, as it has already elsewhere, silence all honest opposition; and anti-vaccinators, unless deeply prejudiced and unwilling to listen to reason, will be the first to join the ranks of the true friends of vaccination, and, by their good example, to carry conviction even to the most stubborn adversary to this great blessing.

We need then hear no more of eighty-three per cent. of vaccinated persons applying for treatment in establishments that should have been closed long ago. Nor will our registers be darkened any more by the small but increasing number of deaths that small-pox is still allowed to cause among the so-called protected. Nor need we inquire if we can for all practical purposes avail ourselves of the great advantages derived from animal vaccination. It is the only vaccination recognised by the Belgian Government, and is extensively practised in France, Russia, Austria, and Prussia. From the icy north to the sunny south, animal vaccination is daily enlisting in its favour the ablest and the greatest of the medical profession, and is acquiring more and more the confidence of

the public. For us what is easier than to follow the example of the Continental States I have named ; and we shall then hear no more of fines and imprisonments, no more of transmitted diseases, no more of post-vaccinal small-pox ! Since I have introduced this system into England, those who have taken the trouble of judging of the results obtained, whatever may have been their previous convictions, whether favourable or otherwise, have all left imbued with the merits of animal vaccination, and believing in its necessity. From a central establishment in London, where hundreds could be vaccinated daily if required, inoculated calves or heifer lymph could be forwarded to any town of the United Kingdom. Dried lymph on points could be sent to country practitioners, and for those who do not believe in the transmission of disease, lymph of the first generation could be supplied, of as great anti-variolic power as heifer's lymph, and in ordinary hands of even more value, since, being slightly humanized, it takes more readily in the human subject. By adopting animal vaccination as part of our national arrangements, we are not only accepting a prophylactic tested by the experience of years, and declared to be of great value by such authorities as Ceely, Marson, Ballard, Depaul, Warlomont, and Lanoix, but what is more, we are doing our duty, not only as men

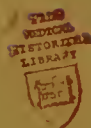
of science, but as honest men. Let us remember that from the protection animal vaccination afforded to the milkers of cows, Jenner, that great genius, was justified in saying "that what renders the cow-pox so extremely singular is that the person who has been thus affected is for *ever after* secure from the infection of small-pox." Such was Jenner's belief, such is mine. Did he not also say, "Whether the nature of the virus will undergo any change from being removed from its original stock in passing successively from one person to another, time alone can determine"?

Time has given its verdict. Vaccine lymph by long human transmission has lost most of its essential qualities.

We must improve, not abandon, compulsory vaccination, complete Jenner's great work, and restore to his immortal discovery all its former usefulness, glory, and prestige.

THE END.





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Author Blanc:
Compulsory
vaccination.
1869.

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